

by Mr. Andrew Garrett, and described in the *Proc. Acad. Nat. Sci. Philadelphia*. One of the most interesting species is *Partula hyalina* (Broderip), found abundantly in three groups of islands. In Tubuai, 100 miles east of Rurutu, it is abundant, and the Austral group appears to be its metropolis. It is found, though sparingly, in nearly every valley in Tahiti. It was also obtained by Mr. Garrett at Mangaia, one of the Cook's, or Hervey Islands, 400 miles west of Rurutu. The variation in examples from the three groups is remarkably slight. It is a strictly arboreal species, and has a uniform white colour.

Another species, *Stenogyra juncea*, Gould (sp.), is found very widely through Polynesia, in all groups north of the equator, and south of all islands from the Marquesas and Paumotu, to the Viti group, and probably ranging further west; they are found under loose stones, beneath decayed wood, among dead leaves, &c., and range from near the sea-shore to 2,000 feet above the sea. Another well-known genus, *Succinea*, is now recorded from Rurutu, slightly differing from a Tahitian species, *S. pudorina* (Gould).

Chondrella (Pease) is remarkable for having no tentacles; during locomotion the animal is nearly or quite concealed by the shell, which is carried diagonally. In creeping, only the extreme tip of the muzzle is seen from above, while the eyes are plainly visible through the transparent shell. The extreme interest of the fauna of oceanic islands becomes continually more evident.

DISTINGUISHING LIGHTS FOR LIGHT-HOUSES

SIR WILLIAM THOMSON writes a long letter on this subject to the *Times* of Tuesday, the letter being the result of a most interesting experimental cruise of ten days on board Her Majesty's ship *Northampton*, in the English Channel, from which he has recently returned, having had many good opportunities of observing the lights on the south coast of England. This has revived his conviction of need for a threefold reform in our lighthouse system, which he has been urging and re-urging since 1872 with hitherto but partial success:—A great quickening of nearly all revolving lights; the application of a group of dot-dash eclipses to every fixed light; and the abolition of colour as a distinction of lighthouse lights, except for showing dangers and channels and ports by red and white and green sectors. Of about 120 revolving lights on the English, Scottish, and Irish coasts, there are in all eighteen in which the periods are ten seconds or less and the times of extinction seven seconds or less. In these quick revolving lights the place of the light is not practically lost in the short intervals of darkness; the eye sweeping deliberately along the horizon, with or without the aid of a binocular, to "pick up the light," passes over less than the breadth of its own field of view in the period of the light, and thus picks it up almost as surely and quickly as if it were a fixed light. And so in respect to compass bearings, whether taken roughly and quickly by inspection or more accurately by azimuth compass, the bearing of the ten-second or quicker revolving lights is taken almost as easily and accurately as if the light were continuous. Sir William contrasts this with the case of the ordinary minute-period revolving light, or even the half-minute period to which some formerly slower lights have been quickened. He shows how difficult it is to pick up these slow lights, and his own experience proves that a fixed light like the Eddystone is much more valuable than the slowly revolving Start.

The Wolf light he found most irregular in its periods, the successive periods of light varying from nineteen to forty seconds, and of darkness from nineteen to thirty-four. These irregularities are apt to lead to most serious mistakes, as Sir William shows.

"Except in one unimportant case—the Dungeness Low Light, which flashes every five seconds—all the revolving lights of the English Channel are too slow, and it would be an unspeakable improvement if, with that exception, every one of them had its speed sextupled. There is no mechanical difficulty in the way of doing this. Generally the same mechanism would suffice with a mere change of adjustment of the governor; but the lightkeeper would have to wind up the weight oftener or longer.

"Revolving lights are, however, but a small minority of all the lighthouses of the world. Of the 623 lights of the British and Irish coasts, just 110 are revolving lights, and the remaining 513 are fixed, and there is a crying want of distinction for fixed lights. The distinction by colour alone ought to be prohibited for all lighthouse lights, on account of its liability to confusion with ships' and steamers' side-lights. Southsea Castle, with its red and green port and starboard side lights, seems as if actually planned to lure on to destruction an unsuspecting enemy carefully approaching the coast with Thomas Gray's happy rule well impressed on his mind:—

" 'Green to green, and red to red,
Perfect safety, go ahead.'

He does so, and is wrecked on Southsea beach.

"My proposal for supplying the want is to distinguish every fixed light by a rapid group of two or three dot-dash eclipses, the shorter, or dot, of about half a second duration, and the dash three times as long as the dot, with intervals of light of about half a second between the eclipses of the group, and of five or six seconds between the groups, so that in no case should the period be more than ten or twelve seconds. This proposal has been carried into effect with perfect success in Holywood Bank Light, Belfast Lough, now the leading light for ships entering the Lough, but which until 1874 was inclosed in a red glass lantern and was only visible five miles, and was constantly liable to be mistaken for a sailing vessel's port side light entering or leaving the harbour of Belfast, or the crowded anchorage of Whitehouse Roads. In 1874 the red glass was removed, and the light was marked by dot, dot, dash (— — — — —, or letter U), repeated every ten or twelve seconds, and has been so ever since. It is now recognised with absolute certainty practically as soon as seen in ordinary weather from the mouth of the Lough, ten miles off, and has proved most serviceable as leading light for ships bound for Belfast or entering the Lough.

"It is much to be desired that the dot-dash system should be seriously considered by the lighthouse authorities of our islands. Hitherto, when attention has been called to it, it has been dismissed with a pleasantry, 'Winking lights won't do,' or else something utterly different has been gravely considered and justly condemned. It is satisfactory now to know that the Deputy-Master of the Trinity Board, Sir Richard Collinson, K.C.B., has, after its character was correctly put before him by the recent Select Committee of the House of Commons on Electric Lighting, given it his approval in the concluding answers of his evidence."

The *Times*, in commenting on Sir William Thomson's letter, speaks of the subject as one of great national importance, Sir William speaking with the twofold authority of a distinguished man of science and of a practical yachtsman. The *Times* endorses emphatically all Sir William's recommendations, and insists especially on doing away with colour as a distinctive feature of lights.

"If," the *Times* concludes, "the recommendations of Sir William Thomson should eventually lead to a reform of this importance and magnitude, he will be a benefactor to humanity; but even without this his advice cannot fail to commend itself to navigators. It bears one of the most distinctive marks of genius—simplicity; and now that it has been brought fairly under the notice of the public, we may confidently hope that in the future, what-

ever may have been the case in the past, it will not have to contend against that love for 'the thing which has been' which in all periods of history has afforded a distinguishing characteristic of the average official intelligence. In a nation of sailors and yachtsmen a suggestion for the improvement of lighthouses and for the greater safety of shipping ought to be certain of speedy and complete consideration upon its merits alone."

THE TURKOMANS

AT the meeting of the Anthropological Institute on November 23, there was read a short but suggestive paper on these wayward children of the desert, contributed by Prof. Arminius Vambéry. The learned writer, who has perhaps as great a personal knowledge of Eastern nations as any man living, regarded the Turkomans as on the whole the purest and most representative branch of the widespread Túrki family and described their outward features as quite distinct from the Mongolian. His account was somewhat vague, but the inference evidently was that they belonged in his opinion ethnically to the Caucasian rather than to the Mongolian group. Nor did he attribute this to the gradual absorption of Iranian elements, but, on the contrary, stated that intermarriages with Persian women were much less frequent than is usually supposed, and that the Turkomans are now what they always have been, men of medium stature, like the Kirghizes and unlike the Usbegs and Osmanlis, amongst whom tall individuals are far from rare, with straight or but very slightly oblique ("almond-shaped") eyes, handsome regular features and fair complexion. He further stated that the Turkoman language was also one of the very purest Túrki tongues still spoken, so much so, that an ordinary Seljukian Turk of Asia Minor would have less difficulty in conversing with a Tekke or Yomut Turkoman than with his nearer neighbours the Turki nomads of Azarbijan and other parts of Persia. In fact, such is the purity of their speech, that the Rev. James Bassett, of the American Mission at Tehrán, is now putting through the press in London his translation of St. Matthew's Gospel in the Jagatai Túrki for the special use of the Tekke Turkomans. Jagatai, it need scarcely be remarked, is one of the most cultivated of all the Tartar tongues and is still current in Bokhara, Khiva, Ferghana, and parts of Kashgaria. In it are written the Emperor Baber's memoirs, and being less affected by Arabic and Persian elements than the Osmanli of Constantinople, it may be taken as, on the whole, the most representative of Túrki idioms. On the other hand, the Túrki belongs undoubtedly to the same great linguistic connection as the Mongolian, both being recognised by modern philologists as collateral, though independent, members of the so-called Finno-Tataric or Ural-Altaic family of languages. Hence Vambéry's description of the physical characteristics of the Turkoman race places them in a sufficiently anomalous position from the anthropological point of view, in so far as they would seem to belong ethnically to the Caucasian, but linguistically to the Mongol stock. Such anomalies are, no doubt, common enough, and instances abound of peoples having changed their language and adopted that of the races by whom they may have been subdued or otherwise influenced. But in the present case the difficulty cannot be got over in this way, nor is it pretended that the Turkomans have adopted a Mongolian form of speech, or indeed that they ever spoke any other language than Túrki. But Túrki and Mongolian being offshoots of the same organic tongue, it follows that both races must have had a common origin, and that the Turkomans have since become differentiated from the ethnical, while retaining the linguistic connection. Now this is entirely at variance with the commonly-accepted doctrine that physical traits are always more persistent than speech, in other words

that, assuming absolute isolation, the process of linguistic will always be more rapid than that of racial evolution.

In the abstract this is no doubt true enough, but practically there is no such thing as absolute isolation in the present stage of the world's history. Least of all can it be predicated of the Turkomans, who are intruders from the east or north-east in their present habitat, who must have absorbed far more Iranian blood than Vambéry is inclined to admit, and who, instead of being the purest representatives of the Turki race, seem really to be a mongrel people, the outcome of fusion of Mongolian and Caucasian elements in Hyrcania, Bactriana, and the Lower Oxus basin. It must be remembered that the whole of this region, as far north at least as the 40th parallel, formed an integral part of the ancient Persian Empire, and the presence of numerous Iranian communities still speaking Persian dialects both in the lowlands and highlands of Turkestan (Tajiks and Galchas) sufficiently proves that this region was fairly occupied by peoples of Iranian stock, if, indeed, it was not their primitive home, before the arrival of the Turki race driven still westwards by the Mongolians of the Gobi. When the Persian power was finally broken by the Arabs, Turki hordes easily took permanent possession of the Atrek and Murghab Valleys, as well as of the Lower Oxus; but in so doing they gradually absorbed as much Iranian blood as to have in course of time become largely assimilated to the Caucasian type. The same fate overtook their Seljukian brethren in Asia Minor and the Balkan peninsula, all of whom have everywhere become largely Aryanised, and have thus collectively contributed to produce the impression, shared by Vambéry with many ethnologists, that the Túrki and Mongol types were originally distinct. They themselves have always rightly looked on each other as brethren, and although no importance can be attached to the tradition of a legendary Túrki, son of Japhet, whence both sprang through the twin brothers Tatar and Mongol, it nevertheless points, like so many other national myths, at a fundamental truth.

Nor are the Mongolian traits so far effaced from the Turkoman race as Vambéry would have us suppose. In "Clouds in the East" Valentine Baker, an equally careful observer, describes them as "muscular, heavy-limbed men, with large hands, rather flat, broad faces, and small eyes, thus showing much of the Tatar type" (p. 212). He even expresses his surprise that it should still be so distinctly marked, "as they constantly capture Persian girls, who become their wives, and so must bring a strong infusion of Persian blood into the race" (*ib.*).

The genuine Túrki type, however, is still best exhibited in the Kazaks, or, as they are more frequently called, the Kirghizes and Kara-Kirghizes of the West Siberian steppes and Pamir table-land. These Kirghizes speak a pure Túrki dialect, and because of their distinctly Mongolian features—square, flat face, high cheek bones, oblique eyes, large mouth, &c.—they are supposed to be Mongolised Tatars by those who hold the two types to be originally distinct. But the supposition is entirely gratuitous, and although they may have been to some extent affected by Mongolian elements during the incessant migrations of the Central and Eastern Asiatic nations, there is nothing in their appearance to imply any profound modification of their outward features, while their Túrki speech militates against the assumption. They resemble the Mongolians because both were originally one, and because in their present homes between Kulja and the Ural Mountains they came in contact with no foreign elements by which the race could be seriously affected. In the Kirghizes we therefore recognise a living proof of the primordial identity of Turk and Mongol.

The transition between the Kirghizes and Turkomans is formed by the Kipchaks of Khokand and other parts of Eastern Turkestan, who, though often classed with the